

REMARKS

Claims 1-17 are pending in this application. Claims 1 and 11 are amended. Claims 1 and 11 are amended to recite “wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width.” These features are supported at least on page 2, paragraph 8 of the current specification. Claims 19-23 are withdrawn as a result of a previous restriction requirement.

Amendments to the specifications are made for clarification purposes. No new matter is added as a result of the above amendments.

Reconsideration of this application in light of the above amendments and the following remarks is requested.

Objection to the Specification

The examiner objects to paragraph 8 of the current specification because while Fig. 4 of the specification illustrates that W_1 is larger than W_2 , the specification discloses that W_2 is larger than W_1 . Applicants respectfully submit that the examiner misinterprets the contact width as W_1 instead of W_3 . By this response, the specification is amended to clarify that W_2 is preferably at least four to eight times larger than the contact width, W_3 , not W_1 . Therefore, Applicants respectfully request the objection to the specification be withdrawn.

Rejections under 35 U.S.C. § 112, Second Paragraph, Claims 4 and 5

The examiner rejects claims 4 and 5 under 35 U.S.C. § 112, Second Paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which Applicant regards as the invention. The examiner alleges that claims 4 and 5 are unclear in reciting the first and second metal lines are wider than the silicide element. Applicants respectfully submit that the amendments made to the specification clarify the features of claims 4 and 5, in that the width of the first and second metal line W_2 is at least four times greater than

the width of the contact W_3 , not the width of silicide element W_1 . Therefore, Applicants respectfully request the rejection of claims 4 and 5 under 35 U.S.C. § 112, Second Paragraph be withdrawn.

Objection to Claims 9 and 17

Claims 9 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Applicants thank examiner Prenty for the indication of allowable subject matter in claims 9 and 17. However, for the reasons set forth below, Applicants respectfully submit that all of the claims are directed to allowable subject matter and that the application is in condition for allowance.

Rejections under 35 U.S.C. § 102(e)

Claim 1

Amended claim 1 recites:

1. A fuse comprising:
 - a silicide element disposed above a substrate;
 - a first terminal contact coupled to a first end of the silicide element;
 - a first metal line disposed above the silicide element and coupled to the first terminal contact;
 - a plurality of second terminal contacts coupled to a second end of the silicide element, wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width;
 - a second metal line disposed above the silicide element and coupled to the plurality of second terminal contacts; and
 - the silicide element having a sufficient width that a programming potential applied across the first and second metal lines causes a discontinuity in the first terminal contact. (Emphasis added).

Claim 1 is rejected under 35 U.S.C. § 102(e) as being allegedly anticipated by U.S. Patent No. 6,661,330 to Young (“Young”).

The PTO provides in MPEP § 2131 that

"[t]o anticipate a claim, the reference must teach every element of the claim..."

Therefore, with respect to claim 1, to sustain this rejection the Young patent must contain all of the above claimed elements of the claim. However, contrary to the examiner's position that all elements are disclosed in the Young reference, the reference does not disclose a plurality of second terminal contacts coupled to the second end of the silicide element, wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width.

Figure 2A of Young is shown below:

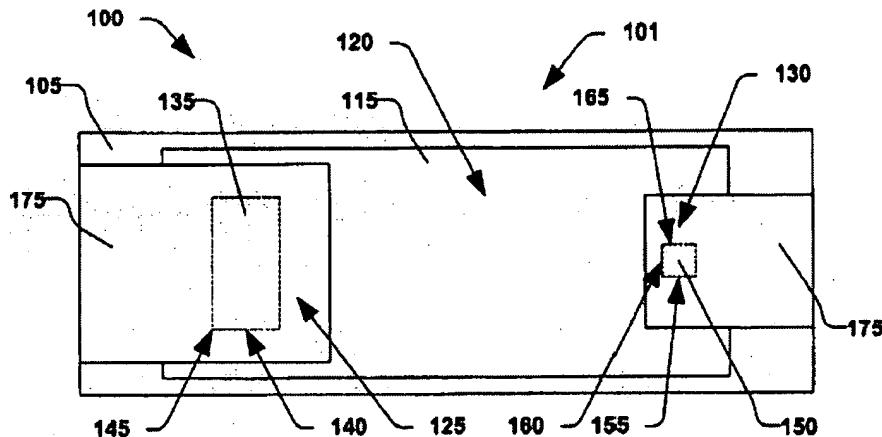


FIG. 2A

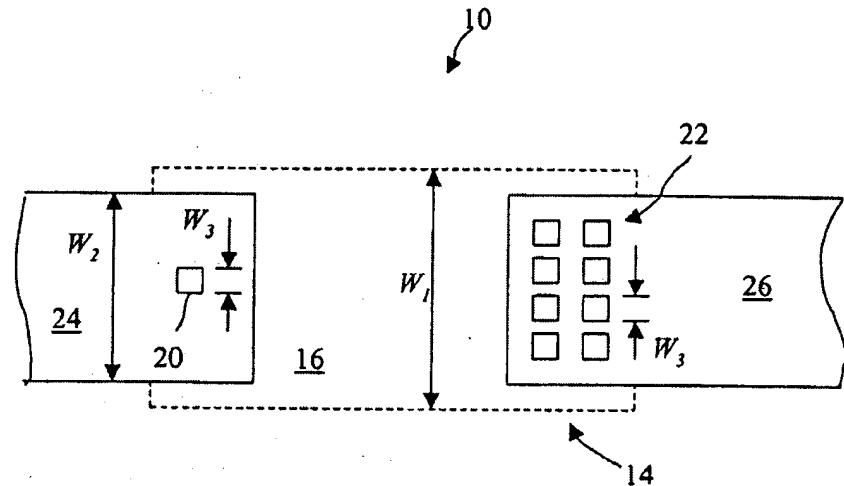
As shown in **Figure 2A**, Young teaches a fuse structure 100 that comprises a first contact member 135 and a second contact member 150. However, the widths of the first contact member 135 and the second contact member 150 are different. In particular, Young teaches at column 6, lines 11-22:

According to one exemplary aspect of the invention, the second contact surface area 160 is smaller than the first contact surface area 145, thereby defining a fusible link 165 of the fuse 101 at the second interface 155. The second contact surface area 160, for example, is at least half the surface area of the first contact surface area 145.

Column 6, lines 11-22, Young.

Thus, Young teaches a second contact service area 160 that has a smaller width than the first contact service area 145. This is contrary to the presently claimed invention, in which each of the plurality of the second terminal contacts and the first terminal contact are all equal in width, W_3 . **Figure 3** of the current specification is shown below:

FIG. 3



As shown in **Figure 3**, the width of the first terminal contact 20 in the presently claimed invention is the same as the width of the plurality of second terminal contacts 22, represented by W_3 . Young does not teach such features. To the contrary, Young specifically teaches a first contact member having a larger surface area than the second contact member, and thus having a larger width. Therefore, Young does not teach the same features as recited in amended claim 1.

In addition, the examiner alleges that Young teaches the features of claim 1 in **Figure 5F**, which is shown below:

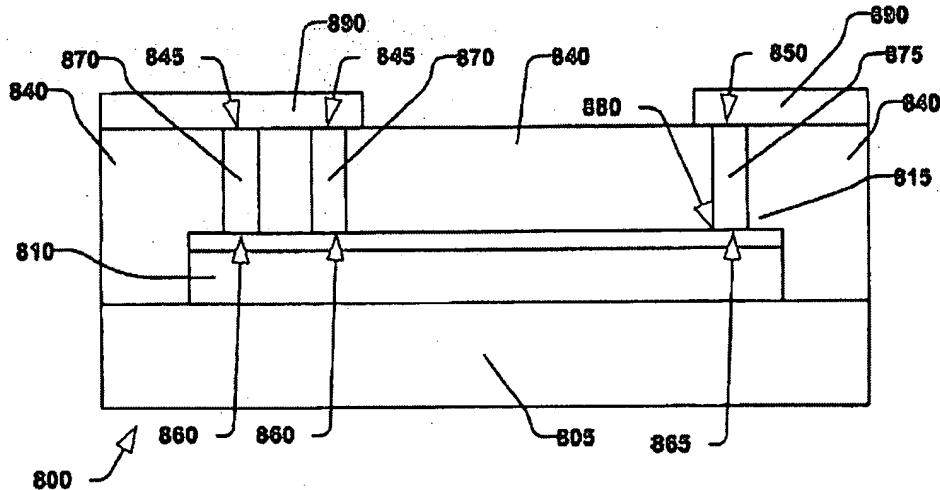


FIG. 5F

As shown in Figure 5F and at column 9, lines 40-50, Young teaches a first contact hole 845 and a second contact hole 850 in dielectric layer 840. However, Young teaches that the first contact hole 845 is larger than the second contact hole 850. Therefore, similar to the above, Young teaches a fuse structure that comprises a first contact hole having a larger width than the second contact hole. The first and second contact holes of Young are not equal in width. Therefore, Young does not teach a plurality of second terminal contacts coupled to the second end of the silicide element, wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width, as recited in amended claim 1.

Thus, the rejection of claim 1 is not supported by the Young reference and should be withdrawn. Independent claim 11 recites subject matter similar to independent claim 1. Applicants respectfully submit that the rejection of claim 11 is also not supported by the Young reference and should be withdrawn.

Rejections Under 35 U.S.C. §103

Claims 10 and 18

Claims 10 and 18 are rejected under 35 U.S.C. § 103(a) as being allegedly unpatentable over U.S. Patent No. 6,661,330 to Young (“Young”) in view of U.S. Patent No. 6,642,601 to Marshall (“Marshall”). Applicants traverse this rejection on the grounds that these references are defective in establishing a *prima facie* case of obviousness with respect to claims 10 and 18.

As the PTO recognizes in MPEP § 2142:

*... The examiner bears the initial burden of factually supporting any *prima facie* conclusion of obviousness. If the examiner does not produce a *prima facie* case, the applicant is under no obligation to submit evidence of nonobviousness...*

It is submitted that, in the present case, the examiner has not factually supported a *prima facie* case of obviousness for the following, mutually exclusive, reasons.

1. Even When Combined, the References Do Not Teach the Claimed Subject Matter

The Young and Marshall patents cannot be applied to reject claims 10 and 18 under 35 U.S.C. § 103(a) which provides that:

A patent may not be obtained ... if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which the subject matter pertains ... (Emphasis added)

Thus, when evaluating a claim for determining obviousness, all limitations of the claim must be evaluated. As discussed above in arguments presented for claim 1, Young fails to teach the features of claims 1 and 11, from which claims 10 and 18 depend. Marshall also fails to teach such features. Marshall teaches a fuse structure that is similar to a prior art bow-tie fuse described on page 4 of the current specification. **Figures 2A and 2B** of Marshall are shown below:

FIG. 2A

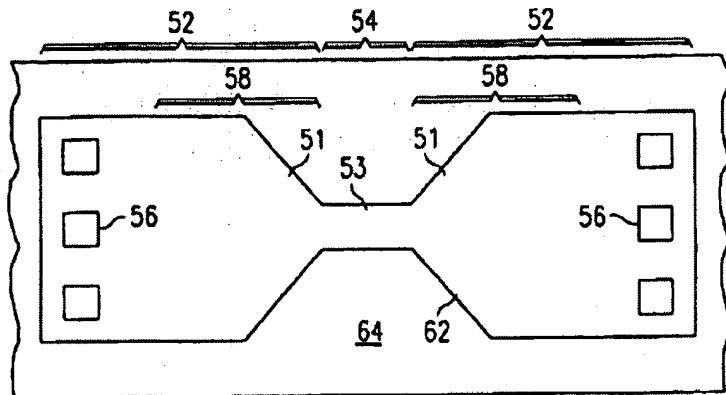
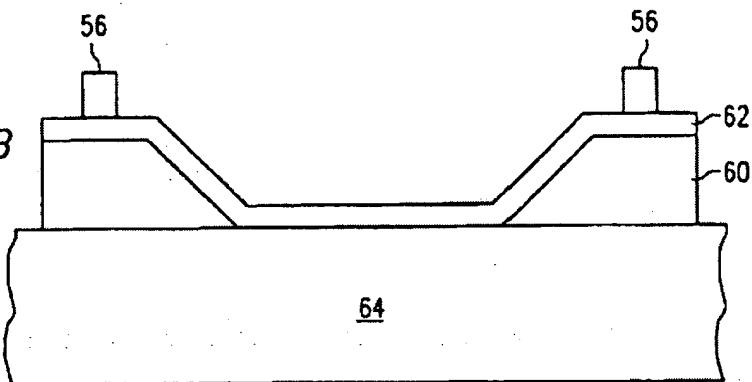


FIG. 2B



As shown in **Figures 2A and 2B**, Marshall merely teaches a fuse that comprises a polysilicon layer **60** and a silicide layer **62**, which provides a stable base for contacts **56**. However, Marshall fails to teach a first metal line that is disposed above the silicide layer and coupled to the first terminal contact, or a second metal line disposed above the silicide layer and coupled to the plurality of second terminal contacts. There is no mention of a metal line being disposed above the silicide element anywhere in Marshall. Therefore, Marshall does not teach the features of claims 1 and 11, from which claims 10 and 18 depend. Since neither Young nor Marshall teaches the features as recited in claims 1 and 11, from which claims 10 and 18 depend, it is impossible to render the subject matter of claims 10 and 18 as a whole obvious, and the explicit terms of the statute cannot be met.

Thus, for this mutually exclusive reason, the examiner's burden of factually supporting a *prima facie* case of obviousness has clearly not been met, and the rejection under 35 U.S.C. §103(a) should be withdrawn.

2. The Combination of References is Improper

Assuming, *arguendo*, that none of the above arguments for non-obviousness apply (which is clearly not the case based on the above), there is still another, mutually exclusive, and compelling reason why the Young and Marshall patents cannot be applied to reject claims 10 and 18 under 35 U.S.C. § 103(a).

§ 2142 of the MPEP also provides:

...the examiner must step backward in time and into the shoes worn by the hypothetical 'person of ordinary skill in the art' when the invention was unknown and just before it was made.....The examiner must put aside knowledge of the applicant's disclosure, refrain from using hindsight, and consider the subject matter claimed 'as a whole'.

Here, neither Young nor Marshall teaches, or even suggests, the desirability of the combination or modification since neither teaches or suggests a plurality of second terminal contacts coupled to a second end of the silicide element, wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width. Even, *arguendo*, if Young teaches terminal contacts that are equal in width, Marshall still does not teach or suggest a first metal line disposed above the silicide element and coupled to the first terminal contact or a second metal line disposed above the silicide element and coupled to the plurality of second terminal contacts.

Thus, it is clear that neither patent provides any incentive or motivation supporting the desirability of the combination. Therefore, there is simply no basis in the art for combining the references to support a 35 U.S.C. § 103 rejection.

In this context, the MPEP further provides at § 2143.01:

The mere fact that references can be combined or modified does not render the resultant combination obvious unless the prior art also suggests the desirability of the combination.

In the above context, the courts have repeatedly held that obviousness cannot be established by combining the teachings of the prior art to produce the claimed invention, absent some teaching, suggestion or incentive supporting the combination.

In the present case it is clear that the examiner's combination arises solely from hindsight based on the invention without any showing, suggestion, incentive or motivation in either reference for the combination as applied to claims 1 and 11, from which claims 10 and 18 depend. Therefore, for this mutually exclusive reason, the examiner's burden of factually supporting a *prima facie* case of obviousness has clearly not been met, and the rejection under 35 U.S.C. §103 should be withdrawn.

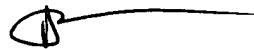
Furthermore, even, *arguendo*, if a person of ordinary skill in the art were to combine the teachings of Young and Marshall, the resulting combination still would not be a fuse that comprises a first metal line disposed above the silicide element and coupled to the first terminal contact, a plurality of second terminal contacts coupled to a second end of the silicide element, wherein each of the plurality of second terminal contacts and the first terminal contact are equal in width, and a second metal line disposed above the silicide element and coupled to the plurality of second terminal contacts. To the contrary, the resulting combination would be a fuse structure that comprises a plurality of first terminal contacts, not a single terminal contact, a plurality of second terminal contacts that are larger in width than the first terminal contacts, and has no metal line disposed above the silicide element. Therefore, one of ordinary skill in the art would not have been led to combine the teachings of Young and Marshall to reach the presently claimed invention.

Conclusion

It is clear from all of the foregoing that independent claims 1 and 11 are in condition for allowance. Dependent claims 2-10 and 12-18 depend from, and further limit, independent claims 1 and 11 and therefore are allowable as well.

The Examiner is invited to call the undersigned at the below-listed telephone number if in the opinion of the Examiner such a telephone conference would expedite or aid the prosecution and examination of this application.

Respectfully submitted,

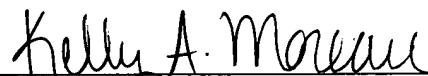


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Dated: 12/16/05

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